Hollywood Park Deer Management Report

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Hollywood Park Deer Management Report

1.0 INTRODUCTION

The white-tailed deer (Odocoileus virginianus) is the most abundant and most widely distributed large herbivore in Texas. It is found in large numbers within the Town limits of Hollywood Park (HP) and the surrounding area. It is considered both an amenity and a nuisance by residents. With ever increasing development of local natural deer habitat, continued feeding of deer by local residents and landscape available for forage, the deer population of Hollywood Park has reached levels that are considered some of the highest per square mile in the United States.

This overpopulation has lead to overgrazing of the limited natural areas within HP and the continued depredation of residents landscape and ornamental plants. Residents have reported human/deer, pet/deer and auto/deer incidents. Due to the lack of natural predators within the Park it has become the responsibility of the Town leadership to establish means to initially reduce and then maintain a deer population that can co-exist with the residents. The residents health, safety and personal property have all been affected by this overpopulation. The overall health and well being of the deer herd has also been negatively impacted by the ever increasing numbers of deer.

The past leadership of HP has recognized the need for action with regards to this issue and has undertaken steps to reduce the numbers of deer within the herd and establish regulations to help in the management of the deer. The present Mayor and City Council recognize the need for a formal plan of action which is the basis for the formation of this deer management report for the Town of Hollywood Park.

Hollywood Park Deer Management Report

2.0 PROBLEM IDENTIFICATION

The Town of Hollywood Park has discussed the concept of a formal deer management program for several years. Several members of the Texas Parks and Wildlife Commission (TP&W) have appeared at different council meetings over the past few years to offer advice and suggestions as to how HP could best approach the issue of urban deer over population.

There has been growing concern from TP&W along with local residents, regarding the current deer population within the city. White-tailed deer over population is not just a local problem. There are deer over population problems in urban and rural areas across most of the United States.

There are a number of concerns that will be addressed by this program, including:

. Public health and safety;
. Landscape Depredation;
. The biological integrity of the Park's public natural areas;
. Maintaining a long-term healthy deer population.

A comprehensive management program must include all of these items.

2.1 Impacts on Habitat and Biodiversity

A healthy habitat has ***biological diversity.*** This means it has a wide variety of flowers, shrubs, trees and wildlife species. The various plants and trees create layers from the ground to the treetops. Each layer or level provides special conditions for the different wildlife and plant species.

Today, much of our local habitat areas *look* nice, with large trees and with sufficient rain there is a green carpet of native grass, however, there are few young trees to be found and very limited shrubbery. In many areas the deer have over-eaten the environmental foliage and the diverse layers are diminishing at an alarming rate leaving species that are dependent of such habitat to migrate to others areas. This is a probable reason the Road Runner and certain wild flowers as well as additional species no longer exist in Hollywood Park. The balance of our natural habitat and environment must be returned to achieve harmonious living conditions for *all* native creatures. When all elements are in balance you have a *Biodiversity* within the environment. We have lost biodiversity within Hollywood Park.

The continued browsing and grazing of overabundant deer populations has caused damage to the environment that they live in. Deer tend to eat things that they like most first and then eat other foods that have a lesser appeal to them. Under normal conditions deer populations have no affect on their environment. You have biodiversity and nature is in balance. However, when deer numbers are to high the stress put on the deer's favorite foods is high and those plants suffer and can be eliminated from the scene altogether. The deer then move down the food supply line until they have created an area devoid of vegetation. In addition the buck's destroy plants and trees with their horns to remove the velvet and to mark their breeding territory.

The "Browse line" is very visible within HP. The deer have eaten the available forage up to the height of almost six feet. There is a significant body of work that is available about the affects of high deer density on vegetation. Most of that work is with regards to forests and understory habitat but it still relates to the problems that we are having within our own environment. A few of those studies are as follows; Waller and Alverson 1997, Augustine and Jordan 1998, Augustine and Frelich 1998, Conover 2001, Tilghman 1989, and Hough 1965. Conover summarizes four separate studies by others that demonstrated how the reduction of high deer density resulted in increased plant production, regeneration and/or plant diversity.

Augustine and Frelich 1998, for example, shows that low deer

densities (13-26 deer per square mile) short term grazing had little effect on certain woodland flowers. However, at densities of greater than 65 deer per square mile the flowers were prevented from recovery. One researcher found (DeCalista 1994) that songbird species richness (number of species) was reduced in the intermediate canopy of woodlands that had deer densities greater than 20 deer PSM. Deer densities in the range of 20 to 38 dpsm resulted in the decrease of both birds and small mammals (Warren 1991). This all underscores the affects that an overabundance of deer can have not only on vegetation (Augustine and Frelich 1998) but also on other members of the ecosystem (Warren 1991).

2.2 Plant and Landscape Damage

In Hollywood Park there is very limited natural habitat for deer to live. Consequently the deer have eaten all of the natural foods that are, by nature, there first choice to eat. Added the fact that there have, not only in the past but also still today, been residents that feed the deer on a regular basis. This encourages the deer to leave there natural habitat and move to where they can get to corn and other foods that have been provided. The deer then feed on landscape and other ornamentals and trees on private property causing dismay and frustration among some residents.

There are preventive techniques such as fencing both normal and electric and the use of repellants that can be used to ward off deer and have been shown to be effective in some cases. The restriction of feeding deer aids in minimizing landscape depredation by deer.

The use of repellents requires serious commitment by effected residents. A constant vigilance is required to maintain the effectiveness of repellants. They must be reapplied periodically based on weather conditions and the growth rate of the vegetation. It should be noted that repellants may not work on all types of plants. The higher the deer density the less effective the use of repellants.

Since the residents of HP are restricted from fencing the front portions of their property they are relegated to fencing other areas

instead. This, of course, creates a rather unsightly array of different materials used to prevent the deer from entering planted areas. The use of privacy fencing in the rear portions of residents property at the height of at least 6 feet does add some security from having deer enter those yards. This does however reduce the total amount of available habitat for deer to forage on.

As mentioned before the feeding of deer by residents results in increased depredation of landscaping on adjacent properties. Deer are attracted to the easy food sources and become conditioned to visiting feeding areas for food. When feeding stops it can take time for the deer to stop going to that location to look for food depending on how long they have been fed there.

It is not expected that depredation of landscaping by deer can be totally eliminated with a management program. However, the frequency and magnitude of such depredation can be reduced with a combination of reduced numbers of deer through the use of a management program and the encouragement of residents to plant more landscaping once the deer herd numbers are lowered. There has not been a formal complaint process defined by HP to date, therefore complaints lodged in the past are not well documented. As part of a management program a simple form of data collection needs to be instituted so that complaints about deer can be recorded for future use.

2.3 Public Health and Safety

The most important issue with regards to this program is the continued health and safety of the residents of this community. There are several areas of concern that need to be addressed.

The most obvious concern would involve human/deer conflicts. There have been several reports of negative human/deer interactions but also of pet/deer conflicts. Some of the reports have indicated that residents personal family pets (dogs) have been attacked, and in some cases, even killed by deer. There have been reports of deer confronting residents with pets and other reports of aggressive behavior, especially by bucks during the breeding season. To date

there have been no reports of serious injury to a resident caused by a deer, at least not that has been reported.

There are several health concerns that are less obvious yet just as important. One of those concerns involves Parasites, especially worms, that have infected the deer herd. TP&W biologists that have made visual assessment of the deer in HP have commented on the heavy parasitic infestation that is quite visible among the deer. It is a health concern for the deer but far more importantly it is a concern for the well being of HP residents.

The feeding of deer by residents causes the deer to congregate in un-natural communal groups that pass not only parasites but also spread diseases among the deer. The deer in turn spread those same parasites everywhere that they leave urine and especially fecal matter (deer pellets). The worms spread by several methods. They infest our lawns and can be picked up by children playing or by stepping on them and carrying them into our homes. Pets, especially dogs have a hard time not eating manure of any kind. They then become infected, lick themselves and we pet them or worse they lick us thus spreading them on to us. Once individuals are infected we spread them amongst ourselves by touching or kissing. Pregnant mothers can infect their unborn or can spread parasites thru breastfeeding to their newborn children.

Car/deer collisions are another public safety concern. Every year there are reports of deer being hit on our roads. Many of the deer are killed by the impact or require being shot by one of our law officers to put it out of its misery. According to national statistics the average cost of a car/deer collision is $3000.00 in this country.

Deer can also carry other diseases that can be transmitted to humans such as bovine para-tuberculosis. Two deer have been tested for this disease which required collection of fecal samples sent to Texas A&M and then on to a laboratory in Wisconsin for 26 weeks of observation. Both samples came back negative.

Another public health concern for residents are tick borne diseases. The Black-legged tick *Ixodes Scapularis* or *Ixodes pacificus* serve as

the primary vector for the bacteria *Borrelia burgdorferi* (Lyme Disease), *Ehrlichia equi* (human granulocytic ehrlichiosis), and *Babesia microti* (human babesiosis).

The diagnosis of Lyme disease has increased 25-fold since 1982, and in recent years there have been about 16,000 new cases annually (Centers for Disease Control and Prevention 1997, Dennis 1998). Lowering deer densities may reduce tick abundance (Daniels et al. 1993, Staford 1993), however, this may not decrease the prevalence of Lyme disease (Wilson et al. 1985; Duffey et al. 1994; Conover 1997).

The adult "Lone Star Tick" *Amblyomma Americana* feeds on White Tail Deer and enables the tick to complete its lifecycle. The nymph of this tick will also feed on rodents, ground nesting birds and people. It is the *Borrelia lonestari* that is responsible for the Southern Tick Associated Rash Illness (STARI) that resembles Lyme disease.

It would require State or Federal testing of ticks retrieved from local deer to determine if the Black-legged tick is present within the confines of Hollywood Park. Short of this type of testing the reduction of the overpopulation of deer within the Park and the use of measures to reduce or eliminate the presence of ticks on individuals property would be advisable.

As a side note. Lyme disease has the ability to "Mask" itself as other diseases. It requires specialized testing to determine for sure if you have contracted the disease. It is advisable for our local citizens to inform themselves about this and other tick borne diseases so as to protect themselves and their families. For more information on this topic visit the Center for Disease Control website.

Hollywood Park Deer Management Report

3.0 Habitat Requirements

White-tailed deer need suitable food, shelter, water and space to ensure its survival. Deer are herbivores and are very adaptable to changing foraging conditions. Deer are like goats and will eat a wide variety of forage including grasses such as St. Augustine. Water needs are met through direct drinking and from vegetation.

When deer populations increase, they can change the habitat they live in. Within HP however, the deer stay due to food and water provided by residents. Although deer have frequently been seen leaving the confines of the Park, they always come back.

The two studies conducted by students from UTSA have clearly shown that the deer in HP congregate and stay within 200 meters of residents that have been identified as those who provide food. With the use of sophisticated Global positioning equipment and daily visual markings the students mapped the location of deer over several weeks. The information is conclusive in that the deer stay close by to where they are being fed.

The impact that deer have on their habitat, preferred or not, can be determined by simply looking at the available forage and landscape within the Park. The damage to the deer's preferred natural forage is extensive. The damage to ornamentals and other landscape depends on the type of vegetation and its proximity to residents that continue to feed and the measures taken by other residents to keep deer from eating their landscape. A browse study could be conducted at a later date to determine the recovery of natural forage destroyed by the overpopulation but there is no need for that at the present time.

Hollywood Park Deer Management Report

4.0 POPULATION DENSITIES

There are several things that can directly affect the size of a wildlife population. The size of the herd is determined by births, deaths, immigration (recruitments) and emigration (animals leaving the herd). Other factors are the life span of the animal and the fertility rate.

If you compare urban deer to those living in a rural setting, it can be assumed that the survival rate among urban deer will be better because of the lack of predators (Swihart et al. 1995). In addition, the fertility rate in urban deer populations tend to be higher because the modified urban habitat provides abundant food sources year round. If you don't counter the reduced death rate and the increased birth rate with some sort of control the deer population can't help but grow. The rate of that growth will be determined by the population dynamics, food availability, mobility of the herd, and the management practices of surrounding areas. The effect of immigration and emigration will be determined by the densities and habitat within adjacent areas.

If there are not controls in place to counter the deer's ability to reproduce and survive then you can expect to see dramatic growth within the herd in a short period of time. We have a high birth rate among the does in HP. It is not uncommon for mature does to have mostly twin and sometimes even triple births.

The number of deer that any one ecosystem can handle is called the "**Biological Carrying Capacity**" (BCC). When deer populations increase to where the BCC is exceeded, habitat quality and the herds physical condition decline.

When deer live in urban areas then there is another aspect of carrying capacity. When human/deer conflicts occur then the humans develop sensitivities to the presence of deer. The number of

deer that can co-exist within that environment is called the "**Cultural Carrying Capacity**" (CCC). The CCC is much harder to measure than the BCC. You can imagine that there would be a much different CCC between say a suburban environment and that of an Airport which would have a zero tolerance for deer.

Most population controls methods focus on increasing the death rate and lowering the birth rate. Some methods focus on removing females from the herd thus not only reducing the present number of deer in the herd but also affecting the future herd size. Contraceptive methods focus only on the fertility rate and does not affect the current number of deer in the herd. Therefore, culling methods provide immediate population results while contraception takes longer to effectively reduce herd size (Hobbs 2000). Trying to manage immigration and emigration of deer herds does not appear to be a realistic option.

4.1 Deer Population Surveys

To date the leadership of HP has not seen the necessity to have a professional deer count taken. There have been over the past few years several unofficial counts made by residents. Although these surveys have not been done by professionals, they have shed some light on the *minimum* number of deer within the Park at the time the counts have been conducted.

For two years in a row the highest number of deer counted was approximately 230+/-. According to Kevin Schwausch who is a Wildlife Biologist and Big Game Program Specialist with Texas Parks a Wildlife, this number only represents a percentage of the deer actually within the Park at any one time.

It is interesting to note that even if you assume that 230 deer were the total number of deer in the Park, with approximately 525 acres of available habitat within HP that would equate to 2.28 acres of habitat per deer. TP&W suggests that there be no more than one (1) deer per twenty (20) acres of habitat in the hill country. That means there are, at a minimum, approx. nine (9) times as many deer as there should be in the Park.

4.2 Determining Population Density Objectives

The first step in determining the population objectives for the Town of Hollywood Park is to determine how much habitat is actually available. Habitat and total acres within the Park two completely different things. There are approx. nine hundred (900) acres of land within the Corp. limits of HP. When you remove roadways, house slabs, driveways, porches, commercial acreage and fenced areas that have no available forage for deer then the actual acreage available for deer habitat is approx. five hundred twenty five (525) acres.

In some deer management programs from around the country it has been noted that the use of "residential" acreage is not included in determining the available habitat for deer. Those programs only use wooded natural areas for consideration of true deer habitat.

The primary task of the leadership of Hollywood Park is to review information that includes the abundance of deer, condition of habitat, auto/deer crashes, human/deer clashes and other deer complaints to determine the Cultural Carrying Capacity within our Town.

It is important to note that the number of deer per acre of habitat may initially need to be low considering the currently over-browsed condition of the Park as opposed to the possible number once natural areas have regenerated and residents feel secure in re-establishing abundant landscaping on their property. The key to the success of the program is to balance the amount of available habitat with the deer and other cultural issues.

Hollywood Park Deer Management Report

5.0 MANAGEMENT OPTIONS

A citywide Deer Management Program should start with the identification of goals and objectives as well as a summary of the problems. Then the management strategies or options should be designed to fit the specific needs of our Town and its residents.

5.1 Goals and Objectives

Texas Parks and Wildlife officials have given us, over the past five years ideas as to how to best manage the deer within HP. Following are the goal, objectives and problems have been developed as a result.

GOAL

Manage the white-tailed deer herd located within Hollywood Park at levels that will satisfy both the Biological and Cultural carrying capacities.

OBJECTIVES

. Reduce the number of auto/deer collisions.
. Reduce the number of deer depredation complaints.
. Reduce the number of human/deer occurrences.
. Educate the residents as to the ways to minimize nuisance deer problems through additional plantings and other methods of deer repellence.
. Where feasible utilize all methods available to maintain deer populations within acceptable limits.
. Maintain breeding populations within biological and/or socially acceptable limits.
. Develop an operational management program implemented by a competent project manager in cooperation with TP&W.

PROBLEMS

- Unlawful feeding of deer by residents causes deer concentrations which develop into depredation of private Property and public health and safety concerns.
- Depredation of landscaping and trees is increasing as deer populations increase.
- Increased human car/deer incidents raise public concerns.
- Data collection needs to be refined to more effectively manage the problem.
- Human/human conflicts increase between residents over deer.

5.2 Management Strategies

There are many options that can be use to control deer populations. Not all options can be utilized within the Park due to physical and sociological reasons. For example, the re-introduction of natural predators such as cougars or even coyotes to reduce the deer herd would not be feasible biologically or socially. However there are options available that can be used. It may be best to use a combination of these options to achieve the desired density goals.

The following management tools have been thoroughly considered to come up with the best management strategies possible.

Monitoring Options

1. Continue to use volunteers to count deer on an as needed basis determined by the Project Manager.
2. Require uniform reporting of complaints by residents regarding deer. This would include the creation of a form as well as a single individual to track/record such information.
3. Require uniform reporting of car/deer incidents within HP.
4. Work with TP&W Biologists to determine recovery of natural areas and browse pressure on landscaping. This information would need to be gathered every year during the spring.
5. Create exclosure areas with fencing to keep deer from feeding in these natural areas. This option is to be used in natural habitat

areas as determined by TP&W Biologists.

Education Options

1. Inform residents regarding the impact of deer feeding on deer and adjacent residents. This can be achieved by informational workshops, articles in the Sparks from the Project Manager or letters sent to residents.
2. Educate the residents about the available methods to protect their property from deer damage including repellents, fencing and deer proof plants. Use methods listed above to distribute the information.
3. Inform residents of deer management needs and goals such as desired densities, crash rates, complaints and habitat impacts.

Population Control Options

1. Regulated hunting
2. Allow nature to take its course
3. Trap and transfer
4. Birth Control
5. Trap and dispatch
6. Depredation
7. Trap and process
8. Introduce Natural Predators
9. Install deer-proof fencing around city perimeter

The use of any or all of these options for population control needs to be monitored to determine the effectiveness of the options. Deer populations in adjacent areas around HP are high and growing. Deer do not recognize artificial boundaries. It is essential to monitor the options to determine when management goals an population stability is achieved.

5.3 Current Management Actions In Neighboring Areas

At the present time there are no other deer populated areas surrounding Hollywood Park that are using any deer population control methods. There are other Cities within the State such as

Lakeway near Austin, Sun City Georgetown, Horseshoe Bay and Sunset Valley that are all overpopulated with deer and all of these Cities presently use the Trap, Transfer and Process permit issued by the TP&W commission.

5.4 Considerations for Building a Management Plan

A good management program must utilize a comprehensive approach to managing deer including the education of the public regarding deer ecology, deterrents to minimize conflicts with deer, monitoring of the deer population for changes and trends, regulating the feeding of deer within the city limits, and methods to control the size of the deer herd.

Deterrent versus control

At the present time deterrents have limited effectiveness with regard to white-tailed deer. The extreme overpopulation that currently exists simply does not lend itself to much success in controlling deer. Once the population is reduced the use of deterrents will become more effective.

It should be the objective of the leadership of HP to maintain a deer population that can live in harmony with the residents without having to resort to the use of deterrents.

Population Control Strategies

Each of the control options mentioned above are presented below in more detail. Key considerations for utilizing these options are discussed. These are simply options available, not specific recommendations.

1. Regulated Hunting

   The use of firearms or archery for the reduction of the deer population within HP would require individuals to be able to show proficiency in the use of either firearms or bow and arrow. There would need to be revisions in the

current City ordinances regarding both means of hunting. The bag limits would be set by the laws of the State as regulated by the Texas Parks and Wildlife Commission.

Hunts would be allowed within designated natural areas or on private property as allowed with permission from the landowner.

Due to the lack of large parcels of natural areas available within the Town limits of HP, this option would most likely meet with opposition from residents.

2. Let nature run its course

By not taking any action to address the deer overpopulation the city will only continue to experience all of the same problems that it has been forced to deal with to date. The problems with complaints will increase with the size of the herd. If the deer are left to control themselves, then unnatural alterations of associated plant and animal communities would likely occur (Warren 1991).

Without a deer management program that addresses the population size and growth, the only factors left to affect the mortality rate other than natural death will be through poaching, car collisions or emigration to other communities. If the population size gets to large the natural death rate will increase due to starvation and increased disease.

3. Trap and Transfer

Capture and relocate is one of several methods available to manage overabundant urban deer populations (Ellingwood and Caturano 1988). This method has been the method of choice for the past four years. The deer are trapped and then transported to a new location on property that the TP&W has determined to be suitable for additional deer. The landowner pays the trapper for the capture and transportation costs incurred with no cost to HP. Several hundred deer have been relocated from HP using this method over the past few years with no death loss incurred by the

deer. This will continue to be a viable method as long as TP&W will allow it.

4. Birth Control

The treatment of deer with contraceptive drugs has only been implemented by universities, wildlife agencies and the Humane Society of the United States as part of approved research projects (DeNicola et al, 2000). After 40 years of research on fertility control, there have been no practical and effective fertility control methods identified for "free ranging deer populations." Free ranging populations, such as is the case in HP pose distinct challenges to the use of contraceptive drugs. The FDA has classified these fertility drugs as experimental only.
Deer fertility information must be acquired to successfully conduct this kind of study. While fertility control may not affect the survival of the individual deer it can potentially be lethal to the population (Hobbs et al. 2000).

A study in New York State, one of the few conducted on a free ranging herd, estimated the minimal annual time commitment per deer for fertility control was approx. 20 hrs. (Rudolph et al. 2000). This computes to a cost of $1,000 to $2,000 per deer assuming a contractor rate of $50 to $100 per hour. The overall cost of implementing an anti-fertility program depends on the number of deer that need to be treated with larger herd numbers requiring significantly more effort and cost (Rudolph et l. 2000; Nielson et al. 1997).

It should also be noted that fertility control methods do not offer immediate population reduction results (DeNicola et al. 2000).

TP&W has recently notified the city council that the use of Immunocontraceptives is not being allowed any longer by the FDA.

5. Trap and dispatch
This method would employ the same trapping techniques as with the Trap and Transfer option however the deer would be harvested

using a single gunshot to the head to insure an instantaneous death. Small caliber ammunition would be used at point blank range to insure that there would be only an entry wound and no exit wound. This method would eliminate the need to load animals in a trailer alive and then deliver them to the processing facility. This option would most likely be used at night. The use of noise reduction devices would lesson the likelihood of disturbing residents.

The deer are processed and the meat is given to a designated local entity to distribute the food to needy individuals. In the past the city has designated the San Antonio area Food Bank as that entity.

6. Depredation

There are three ways the Depredation permit issued by the Texas Parks and Wildlife can be utilized.

A. Sharp Shooting

This is the selected method to initially reduce the deer population in many cities in the north where there are virtually no areas to relocate deer. This option entails the use of highly qualified individuals that use high caliber rifles outfitted with powerful scopes and silencing devices to shoot deer in the head over baited sights. The ammunition used is designed to make an entry wound and no exit wound. The shooter then moves to another location while others remove the deer, clean up any blood and re-feed the site. This is a very effective method however it is more expensive than the methods the city has used in the past. Costs run between $200 and $500 per deer depending on how many deer are to be removed and how easy they are to harvest.

The harvested deer are then processed and the meat distributed as mentioned in the previous option above.

Current prohibitions to the discharge of weapons within Hollywood Park would need to be modified for option to be used.

B. Bow and Arrow

Another method used under the depredation permit is the use of Archery. Rather than use rifles, skilled archers are used in much the same manner as a sharp shooter.

C. Trap and dispatch

Trapping deer and then euthanizing them at the trap site is also an option. The deer must be taken to a processor within a short time in order to eliminate the possibility of spoilage. This holds true with any depredation option. The use of a rifle, handgun or capture bolt device in used to cause instant death.

Social and practical constraints may make this option not viable.

7. Reintroduction of natural predators

Cougars, coyotes, bobcats and wild dogs are the most common predators of deer in Texas. It is not regarded as a viable option for HP. The lack of space and suitable habitat for these animals in an urban setting are the reason (Coffey and Johnston 1997). Both ecological and social constraints prohibit this option from being viable.

8. Create more deer habitat

The Town of Hollywood Park is surrounded by the City of San Antonio and other incorporated cities. There are no available acres for the city to consider to increase the size of deer habitat. However, once the deer population is significantly reduced the natural areas within HP should recover and the residents can be encouraged to replant landscape that would help support the lower number of deer so that the remaining deer have virtually no noticeable affect on the natural areas or local residents landscape.

9. Trap and Process

This option involves the use of the same trapping methods used in the Trap and Transfer option however the captured deer are taken to a processing facility instead of being relocated and the meat from these deer is used to feed the needy as mentioned earlier.

10. Install deer-proof fencing around the city

This option would be extremely expensive and would entail installing game fencing at least 8 ft. high around the perimeter of the city. It would also require the installation of cattle guards across every street and other opening that could not be fenced. This option would eliminate the immigration and emigration of deer both in and out of the city limits. This option would not address the deer overpopulation that already exists. Other methods would need to also be employed.

Hollywood Park Deer Management Report

6.0 SUMMARY OF CONDITIONS

It is well documented that deer populations in urban areas tend to have higher biological carrying capacities than cultural carrying capacity, mostly because deer have the ability to adapt well to the suburban residential landscape. It is also well documented that the deer populations will increase rapidly without the presence of natural predators which results in long-term changes to habitat.

When deer numbers are high in suburban settings they are more likely to create unwelcome damage to landscaping, gardens and motor vehicles. Within cities that collect data with regards to these issues the higher the number of deer the higher the incidence of reported complaints.

There are a number of viable management options available for urban deer population management. However, not all options can be applied in all situations.

Deer management is a long-term commitment. Humans have replaced the deer's natural predators within the suburban environment. It is left to us to manage the deer. This occurs by default, to some extent, via car/deer collisions. However, in the interest of public health and safety and habitat recuperation and preservation, other means of deer removal must also be considered and employed.

Hollywood Park Deer Management Report

7.0 RECOMMENDATIONS

Based on the information gathered on various management strategies, city regulations, and health and safety considerations, a comprehensive Deer Management Program is being recommended for the Town of Hollywood Park. The recommended components to be included in the Program are outlined in the following sections.

Citywide management Strategies

Monitoring

- A deer count should be conducted on an annual basis at the discretion of the project manager or the Mayor and city council to determine deer densities and minimum numbers of deer.

- The city should create a Deer Monitoring Report Form that will be made available to residents to aid in reporting incidences with deer. These incidences would include human/deer, pet/deer, auto/deer and property depredation by deer.

- The city should continue to work with TP&W in gauging the effectiveness of the Project and in creating a deer exclosure demonstration area within the natural areas within the Park.

Education

- Inform residents regarding the impact of deer feeding on deer and adjacent property. This can be achieved by neighborhood workshops, the Sparks or informational letters.

- Educate the residents about the available methods to protect their property from deer damage by way of the use of repellents, fencing and deer proof plantings.
- Inform the residents of deer management needs and goals (density

trends, crash rates, complaints, habitat impacts).

Ordinances

. Maintain and enforce current Deer Feeding Ban Ordinance

The purpose of a feeding ban is to discourage residents from placing corn or other food stuff in amounts and locations that would attract deer to their property. Deer are opportunistic foragers. In the wild they will travel along a routine path eating as they move along. In HP with the limited natural areas to travel and stay in, deer use the entire area especially when there are residents that feed them.

One study conducted by the Department of Natural Resources (DNR) in Bloomington MN. used radio signal collars on 31 deer to study how artificial feeding changed their migratory patterns. The study found that deer regularly travel through neighborhoods to specific private property feeding sites. The feeding sites were often more than one-half mile from the deer's primary habitat. Some deer would return in the evening to bed down in Hyland Park, while others stayed near their neighborhood food source. The results showed that artificial feeding dramatically influenced deer immigration patterns. The study explained why aerial deer surveys found few deer in habitat areas but high numbers in non-habitat areas where artificial feeding was taking place.

This information concurs with the Global positioning study conducted by students from UTSA on two different occasions. The first study conducted almost five years ago and the second study done two years ago both show conclusively that deer clustered in areas within 200 meters of homes that provided food for deer. This indicates that deer in HP will stay in very close proximity to the artificial feeding sites and not venture far from there to find forage. This in turn causes the deer to heavily forage on landscape that is located within a very short distance from the feeding sites.

One positive aspect of the feeding ban has been that many individuals have stopped feeding the deer. This in turn has reduced

the amount of corn that individual deer consume on a daily basis. The positive aspect of this is that the chance for these deer to suffer from Aflatoxin poisoning is reduced. *Aflatoxins* are toxic compounds found in corn that is contaminated by the fungi *Aspergillus Flavus* and *Aspergillus Parasitius* which at levels more than three (3) parts per billion (ppb) can cause serious health problems to animals and birds that eat the corn. Deer must consume larger amounts to be affected. It has been indicated by TP&W Biologists that the overall health and well being of the deer herd in HP has been and continues to be affected by feeding corn to deer. Birds and small animals, especially the young offspring of the creatures can be easily killed by Aflatoxin poisoning.

Other risks to deer associated to feeding

When corn is fed to deer other problems can occur. One such problem is the risk of a deer developing "Lumpy Jaw". This occurs when a deer eats corn and a piece of the corn lodges along a tooth or is forced into the gum while chewing. Once this occurs, parasites, namely arterial worms enter the area and infect the deer. An area of puss and liquid will form under the lower jaw of the deer. As the infection worsens the deer's ability to digest its food will slow, it will develop very loose stools and will eventually die.

Another problem with feeding deer occurs when residents feed on their gravel driveways or on the ground. When the deer licks to pick up the corn or other food it also picks up grit, sand and small stones which it also chews along with the food. TP &W officials claim this can reduce the useful life span of a deer's teeth by as much as one-half. It can become so painful for the deer to eat that they will simply starve to death.

Individuals who feed in containers or troughs do not help the deer either. This feeding method brings deer together in un-natural communal feeding situations that allow the deer to pass parasites and diseases among the herd in a much more accelerated rate thus causing illness and subsequent death or at the very least a more stressful life.

It should be noted that the overall appearance of the deer herd has **improved** since the initiation of the feeding ban several years ago.

It should also be noted that the feeding of deer also causes problems in getting deer to leave areas where they are being feed to come to trap sites.

Population Control Strategies

To date the following methods of deer population control have been implemented by the city. A review and evaluation of new control strategies would be conducted annually by the Project Manager and City leaders in conjunction with TP&W.

Initially the Program should strive to achieve an overall deer density close to the States hill country density levels of one deer for every twenty acres of habitat. This may allow for regeneration of both natural and landscape vegetation, significantly reduce the incidence of human/deer conflicts and car/deer collisions. It will take at least two years of uninterrupted trapping during the season, which runs from the first of October to the end of March each year, to achieve this goal. After that much time a clearer idea of the immigration of deer from outside HP can be assessed.

If after that two year initial period the original goal has been achieved and there is evidence that regeneration of the natural and artificial habitat within the Park could possibly support a larger herd without creating problems for the residents or the deer then the deer herd population could be allowed to increase. It is very easy to achieve a larger number of deer but difficult to reduce it. That should be kept in mind before deciding to increase the size of the herd.
Time and good management will give us the opportunity to discover what the real carrying capacity, both biologically and socially, is for deer in HP.

Methods

- **TTT Trap Transfer and Transplant**

  This method requires the use of several options. Drop nets have been used successfully in the past to capture deer in HP. They are used most effectively in the southern part of the city south of Donella. The city owns 8 ft. tall pens that have also been used in every part of the city with success. The use of tranquilizer darts and smaller traps in areas where it is difficult to achieve results by other methods might need to be employed.

  Once the deer are caught they are marked, given shots and any other requirements the state may have are satisfied before the deer are taken to their new location. Most recipients of these animals need them for restocking and have agreed not to hunt the deer for specified periods of time.

- **TTP Trap Transport and Process**

  Under this State approved permit the deer that are trapped are taken to a processing facility and the meat given to the needy. The same methods of capture as mentioned in the TTT are employed. The difference with the handling of the animals results from laws that prohibit the use of drugs of any kind being in the system of any animal, including deer, that are to be consumed by humans. Because of these laws, which are both State and Federal, the use of tranquilizers on the deer is strictly prohibited.

- **Trap and Dispatch**

  This is still a TTP option but with a difference. Instead of loading the captured deer into trailers alive and having them killed by the processor, the deer would be killed as soon as possible with a single shot to the head with a low caliber weapon at point blank range. The deer would then be loaded and taken to the State approved processing facility.

Hollywood Park Deer Management Report

8.0 IMPLEMENTATION

The sequence in which the program should be implemented is expected to generally proceed as follows:

April 1st thru the end of September the Project Manager should be involved in advertising the need for ranchers and other individuals who might be willing to accept deer. The Manager would also be seeking trappers to give offers to trap and transport deer for the city. September is the time to apply for permits to capture deer from the State. September is also the time to start approaching residents for the use of their property to trap and to also start the baiting process. April thru September is the time to investigate other options available for deer overpopulation control.

October 1st thru March 31st is the trapping season. The Project Manager will continue to advertise for relocation sites and work with TP&W to determine the recovery process of habitat within the park especially in the spring.

It should be understood that deer population control of some kind will be an on-going commitment in the community. Annual reviews and updates would continue on in a similar cycle to that which has been outlined.

It should also be understood that it could take years to achieve the density goals identified in this program. The cooperation of city and State officials, law enforcement and the general public along with any other unforeseen problems that might arise will all have a bearing on the success of the program.

Hollywood Park Deer Management Report

9.0 ESTIMATED COSTS

To date the overall unit cost per relocated or processed deer has been minimal compared to other cities across the country. As long as the State will allow us to relocate deer the cost will be low. The city has, in the past been required by the State to capture, process and test at least one (1) deer for every ten deer that we have wanted to relocate. The initial requirements by the State have been met and the city will only need to test three (3) deer for every 100 deer that we want to relocate in the future. Each deer that has been tested in the past has cost the city approximately $150 per deer.

The city already owns the pens that have been used for the past two years and does not pay the trapper for any deer that are relocated. Those costs are covered by the individual who receives the deer. Those costs are for the trapping and delivery costs incurred by the trapper.

The Project Manager is paid for their services which are essential to the Program.

If the TTT option is not available then the city will be forced to process deer. The cost to do that per deer has been $110.

The city has also paid for the corn used to bait the trap sites.

Estimated cost per season are as follows:

TTT option

Project Manager	$15000.00
Corn	$ 100.00
Advertising	$ 500.00
Testing	$ 200.00
Misc.	$ 500.00
Total	$16300.00

Number of deer Transplanted

250	225	200	150

Unit cost per deer

$65.20	$72.44	$81.50	$108.67

TTP Option

Project Manager	$15000.00
Corn	$ 100.00
Misc.	$ 500.00
Total	$15600.00

Trapping and Processing are $ 110.00 per deer

Unit cost per deer

250	225	200	150
$110.00	$110.00	$110.00	$110.00
$ 62.40	$ 69.33	$ 78.00	$104.00
$172.40	$179.33	$188.00	$214.00

After the initial goals have been achieved the need for a full time Project Manager should be reviewed on a yearly basis.